

**SURVEY REPORT
FOR THE
OCEAN BOUNTY RIG MOVE TO
THE THYLACINE – 1 LOCATION**

HY15597- 31

Client : Woodside Energy Limited
1 Adelaide Terrace
PERTH WA 6001

Date of Survey : 29th April – 7th May 2001

Date of Report : 8th May 2001

Checked :

Authorised : _____

This document is confidential. The copyright © therein is vested in Fugro Survey Pty Ltd, West Perth. All rights reserved. Neither the whole, nor any part of this document may be disclosed to any third party nor reproduced, stored in any retrieval system or transmitted in any form nor by any means (electronic, mechanical, reprographic, recording nor otherwise) without the prior written consent of the copyright owner.

TABLE OF CONTENTS

	<u>PAGE NO</u>
ABSTRACT	i
1.0 INTRODUCTION	1
1.1 Scope of Work	1
1.2 Sequence of Events	3
2.0 SURVEY PARAMETERS	4
2.1 Geodetic Parameters	4
2.2 Differential GPS Reference Stations	5
2.3 Project Co-ordinates and Tolerances	5
3.0 EQUIPMENT AND PERSONNEL	6
3.1 Equipment Listing	6
3.2 Vessels	6
3.3 Personnel	9
4.0 EQUIPMENT CALIBRATIONS	13
4.1 DGPS Navigation Integrity Check	13
4.2 Gyro Compass Check	14
5.0 SURVEY PROCEDURES	15
5.1 Mobilisation	15
5.2 General Survey Procedures	15
5.3 Demobilisation	16
6.0 RESULTS	17
6.1 Final Position	17
6.2 Rig Heading	18
6.3 Anchor Positions	18
7.0 SAFETY	19
8.0 CONCLUSIONS AND RECOMMENDATIONS	20

Contents (continued)

FIGURES

FIGURE 1	GENERAL LOCATION DIAGRAM	2
FIGURE 2	EQUIPMENT FLOW DIAGRAM – OCEAN BOUNTY	7
FIGURE 3	EQUIPMENT FLOW DIAGRAM - AHV'S	8
FIGURE 4	OCEAN BOUNTY - VESSEL OFFSETS	9
FIGURE 5	PACIFIC SENTINEL - VESSEL OFFSET DIAGRAM	10
FIGURE 6	PACIFIC CONQUEROR - VESSEL OFFSET DIAGRAM	11

APPENDICES

APPENDIX A	DAILY OPERATIONS REPORTS
APPENDIX B	PROJECT COORDINATE LISTINGS AND ANCHORING PROCEDURES
APPENDIX C	DGPS AND GYRO CHECKS
APPENDIX D	FINAL POSITIONING DATA

ABSTRACT

Between 29th April and 7th May 2001, Fugro Survey provided equipment and personnel for the MODU Ocean Bounty rig move to the Thylacine-1 location in exploration permit T/30P, Otway Basin, Australia.

Surface positioning was achieved utilising Fugro Survey's Multi-Reference Differential GPS and Starfix Seis Navigation Software.

The final position for the drillstem derived from DGPS observations at the Thylacine-1 location was:

Location Name: THYLACINE-1

Easting: 665 030.3 m

Northing: 5 654 721.5 m

Latitude: 39° 14' 27.592" S

Longitude: 142° 54' 44.169" E

Rig Heading: 251.5° True

This position is 6.8 m on a bearing of 111.7° (G) from the proposed Thylacine-1 location.

All co-ordinates in this report are quoted in AGD84 datum and UTM CM 141°E (Zone 54) projection unless otherwise stated.

1.0 INTRODUCTION

Fugro Survey Pty Ltd (Fugro) was contracted by Woodside Energy Limited (Woodside) to provide positioning services for the mobile offshore drilling unit (MODU) Ocean Bounty move to the Thylacine-1 location in exploration permit T/30P, Otway Basin.

A general location diagram is shown as Figure 1.

This report details equipment used, survey parameters adopted, procedures employed, and the results achieved. Safety is included in Section 7.0 of this report.

1.1 Scope of Work

Personnel and equipment were to be provided on a 24-hour per day basis for:

- Surface navigation for the Ocean Bounty using Fugro's Starfix-Spot Differential GPS (Optus and Apsat satellites) and Multi Reference Differential Solution.
- Surface navigation for two AHV's and barge management system to send tow route and anchor locations from the survey computer to the AHV's.
- Final rig position calculation for the Thylacine-1 location using DGPS observations.
- Logging of GPS Phase Data

Woodside provided co-ordinates for the proposed Thylacine-1 location and Diamond Offshore supplied the proposed anchor pattern. These co-ordinates are located in Appendix B.

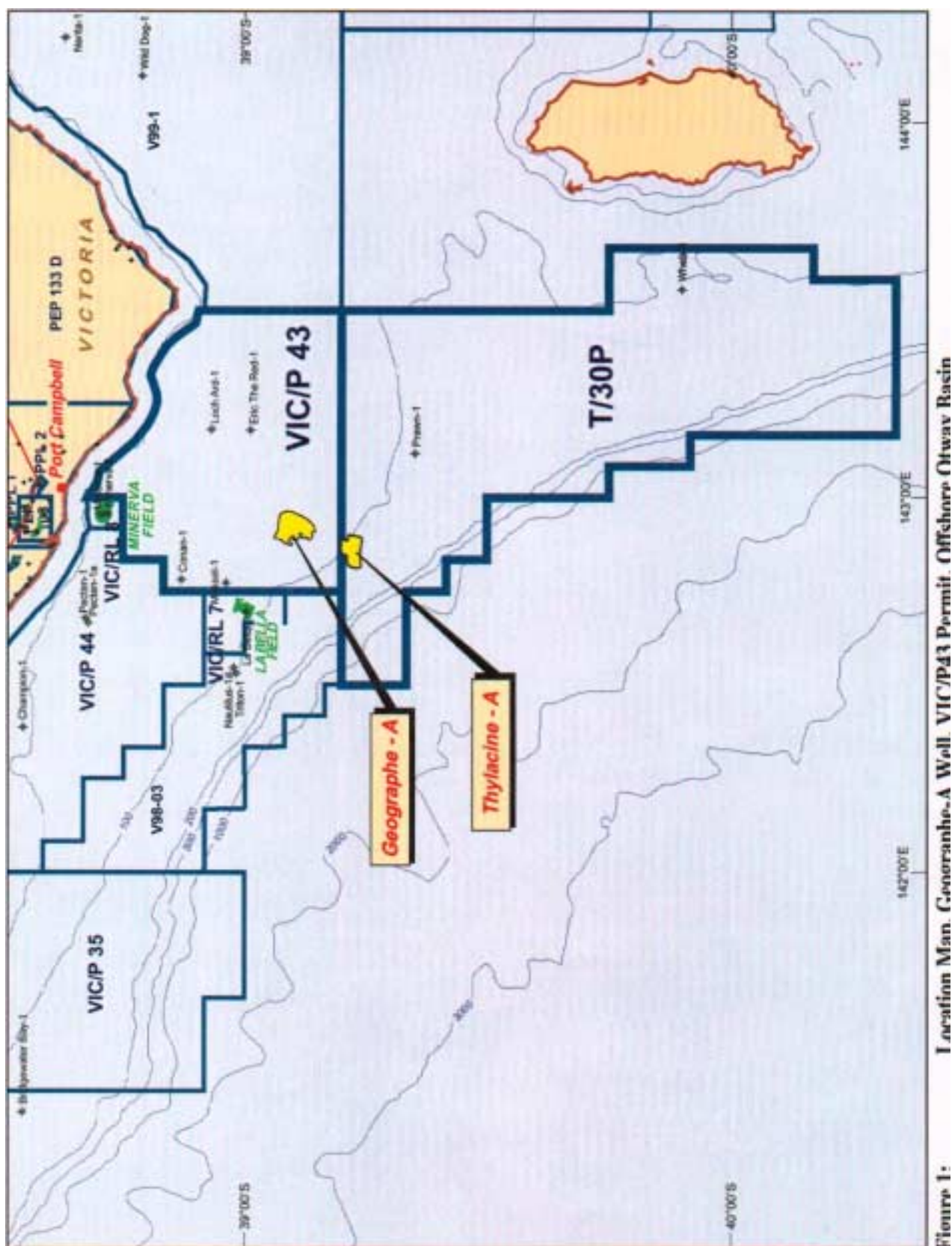


FIGURE 1 GENERAL LOCATION DIAGRAM

1.2 Sequence of Events

29 th April 2001	Personnel travel to Melbourne, overnight at Melbourne Hilton.
30 th April 2001	Personnel depart Melbourne for Sale and then on to the Ocean Bounty. Attended rig briefing. All navigation systems powered up, checked and found to be fully functional. DGPS integrity data collected. Commence recovery of anchors.
1 st May 2001	Anchor recovery completed. Commence tow to Thylacine-1 location.
2 rd May 2001	Rig on tow to Thylacine-1 location. Personnel attend weekly safety meeting, fire and abandon rig drill.
3 rd May 2001	Rig on tow to Thylacine-1 location. Sun azimuth observations for gyro calibration.
4 th May 2001	Commence anchor deployment at Thylacine-1 location.
5 th May 2001	Anchor deployment and pre-tensioning completed. L. Clark departs rig and returns to Perth. Commence logging final position. Rig position field report issued to client. Commence logging GPS Phase measurements.
6 th May 2001	End logging of GPS Phase measurements. Attend H2S drill and abandon rig drill.
7 th May 2001	A. Sarolea departs rig and returns to Perth.

Full details of Fugro involvement in the rig move are presented in the Daily Operations Reports included in Appendix A.

2.0 SURVEY PARAMETERS

All co-ordinates supplied in this report are referenced to the Australian Geodetic Datum 1984 (AGD84). The GPS is in reference to the World Geodetic System 1984 (WGS84).

2.1 Geodetic Parameters

Datum	:	WGS84
Reference Spheroid	:	World Geodetic Spheroid 1984
Semi-major Axis	:	6 378 137 m
Inverse flattening (1/f)	:	298.257223563

The proposed drilling location and all project co-ordinates are in terms of:

Datum	:	AGD 1984
Reference Spheroid	:	Australian National Spheroid (ANS)
Semi-major Axis	:	6 378 160 m
Inverse flattening (1/f)	:	298.25

Projection	:	UTM
False Easting	:	500 000 m
False Northing	:	10 000 000 m
Latitude of Origin	:	0.0°
Central Meridian (CM)	:	141° East
UTM Zone	:	54
Scale Factor on CM	:	0.9996
Units	:	International Metres

Datum Transformation

The transformation parameters used for conversion from WGS 84 co-ordinates, generated by the Differential GPS system, to AGD 84 are listed below. Fugro follow the DMA convention for datum transformations.

X Shift (metres)	=	+116.0000	Rotation X (secs)	=	+0.2300
Y Shift (metres)	=	+50.4700	Rotation Y (secs)	=	+0.3900
Z Shift (metres)	=	-141.6900	Rotation Z (secs)	=	+0.3440
Scale (ppm)	=	-0.0983			

2.2 Differential GPS Reference Stations

The reference stations listed in the table below were used in the computation of the Multi Reference DGPS position.

Description	Site ID	Latitude (S)	Longitude (E)	Height (m)	Datum
Melbourne	385	38° 27' 53.375"	144° 54' 46.909"	144.9	WGS 84
Bathurst Is	336	33° 25' 46.902"	149° 34' 01.960"	756.8	WGS84
Pt Augusta	326	32° 29' 55.166"	137° 46' 31.459"	19.0	WGS 84

2.3 Project Co-ordinates and Tolerances

Woodside supplied the proposed target co-ordinates for the Thylacine-1 location.

THYLACINE-1	Easting	Northing
Proposed Wellhead	665 024m	5 654 724m

The tolerance for the final drill rig position, as specified by Woodside was to be within a 50-metre radius of the design location.

Please refer to Appendix B for the full listing.

3.0 EQUIPMENT AND PERSONNEL

3.1 Equipment Listing

OCEAN BOUNTY

- 2 x Starfix Seis navigation computers and monitors
- 1 x Starfix-Spot (Optus) DGPS System c/w antennae, cabling and interfaces
- 1 x Starfix-Spot (APsat) DGPS Systems c/w antennae, cabling and interfaces
- 2 x Trimble 4000 series GPS Receiver's c/w antennae, cabling and interfaces
- 2 x MRDGPS computers and monitors with interfaces
- 2 x Tokimec GM20/21 Gyro Compass
- 1 x PCTug computers and monitor (Spare)
- 2 x Remote Tug Tracking Telemetry Systems (radio/modem & antenna)
- 1 x Theodolite and tripod

Pacific Sentinel and Pacific Conqueror (Anchor Handling Vessels)

- 1 x PCTug navigation computer
- 1 x Monitor
- 1 x OmniSTAR^{plus} Enhanced Differential System (EDS) unit c/w associated antenna, cabling and interfaces
- 1 x Remote Tug Tracking Telemetry System (radio/modem & antenna)
- 1 x Fluxgate Compass

Please refer overleaf for equipment flow diagrams shown as Figures 2 and 3.

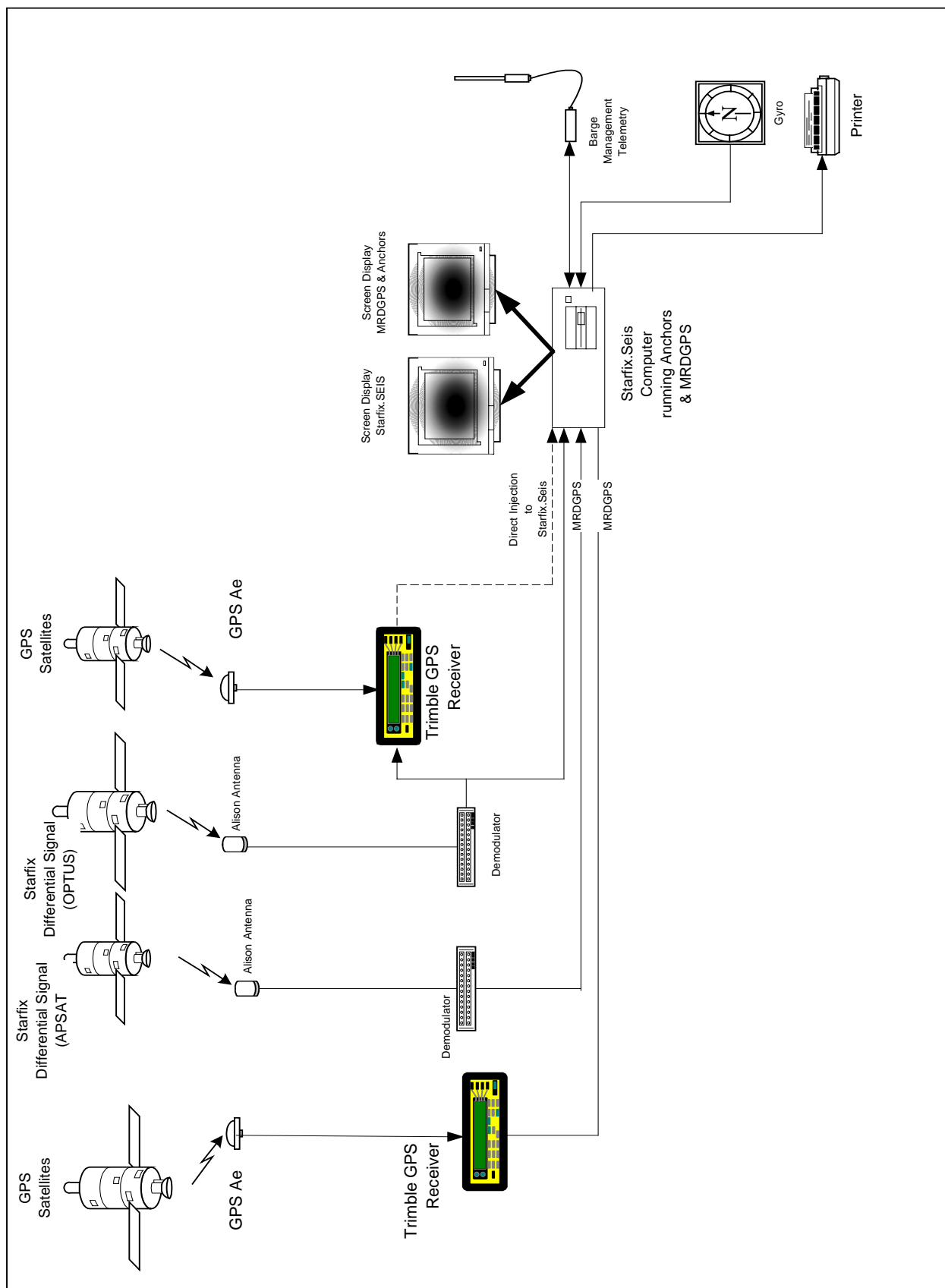
3.2 Vessels

The vessels used for anchor handling and towing of the Ocean Bounty were the Pacific Sentinel and Pacific Conqueror.

Refer to Figures 4, 5 and 6 overleaf for vessel offset diagrams.

FIGURE 2

EQUIPMENT FLOW DIAGRAM – OCEAN BOUNTY



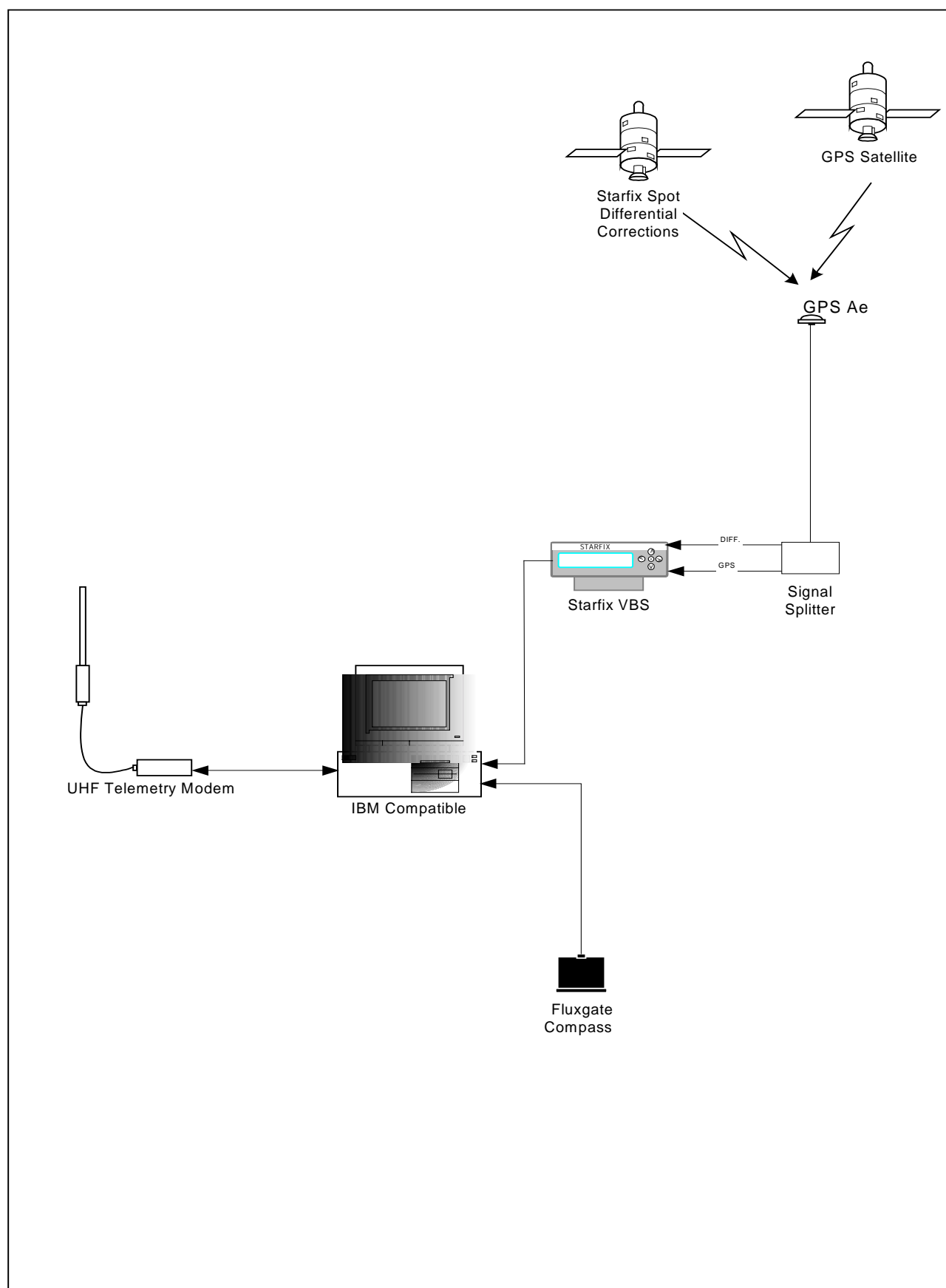
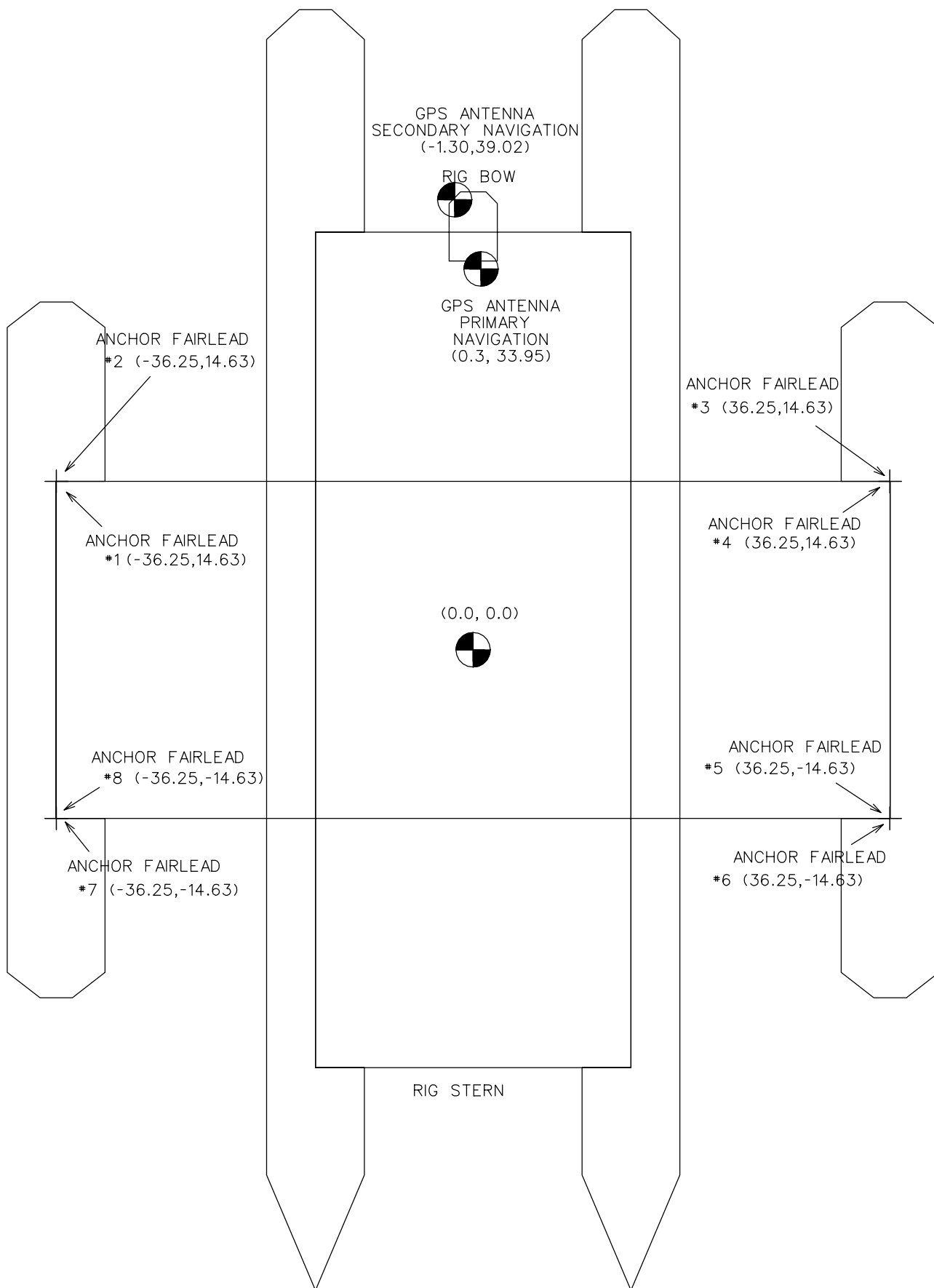
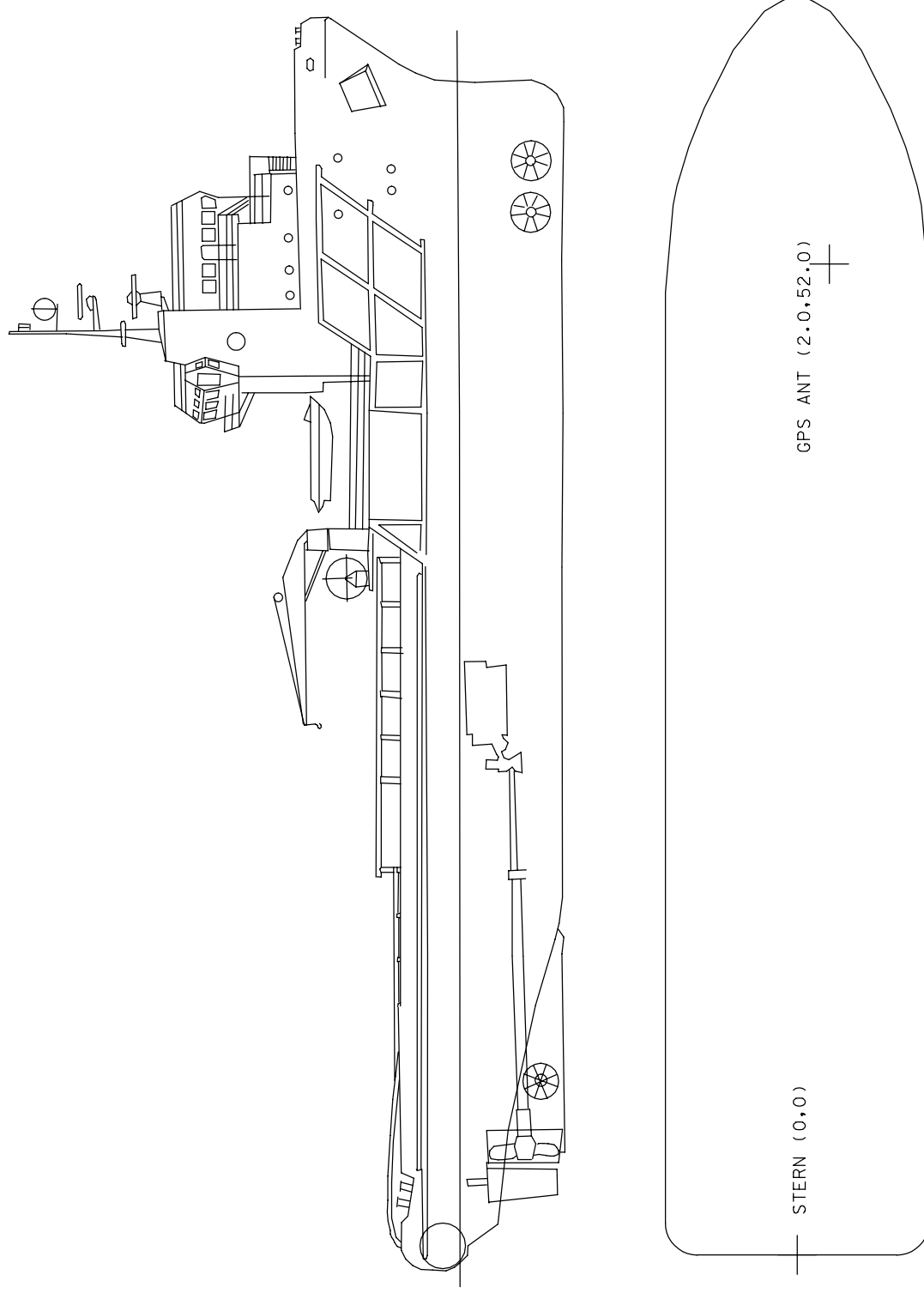
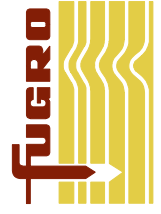


FIGURE 3

EQUIPMENT FLOW DIAGRAM - AHV'S

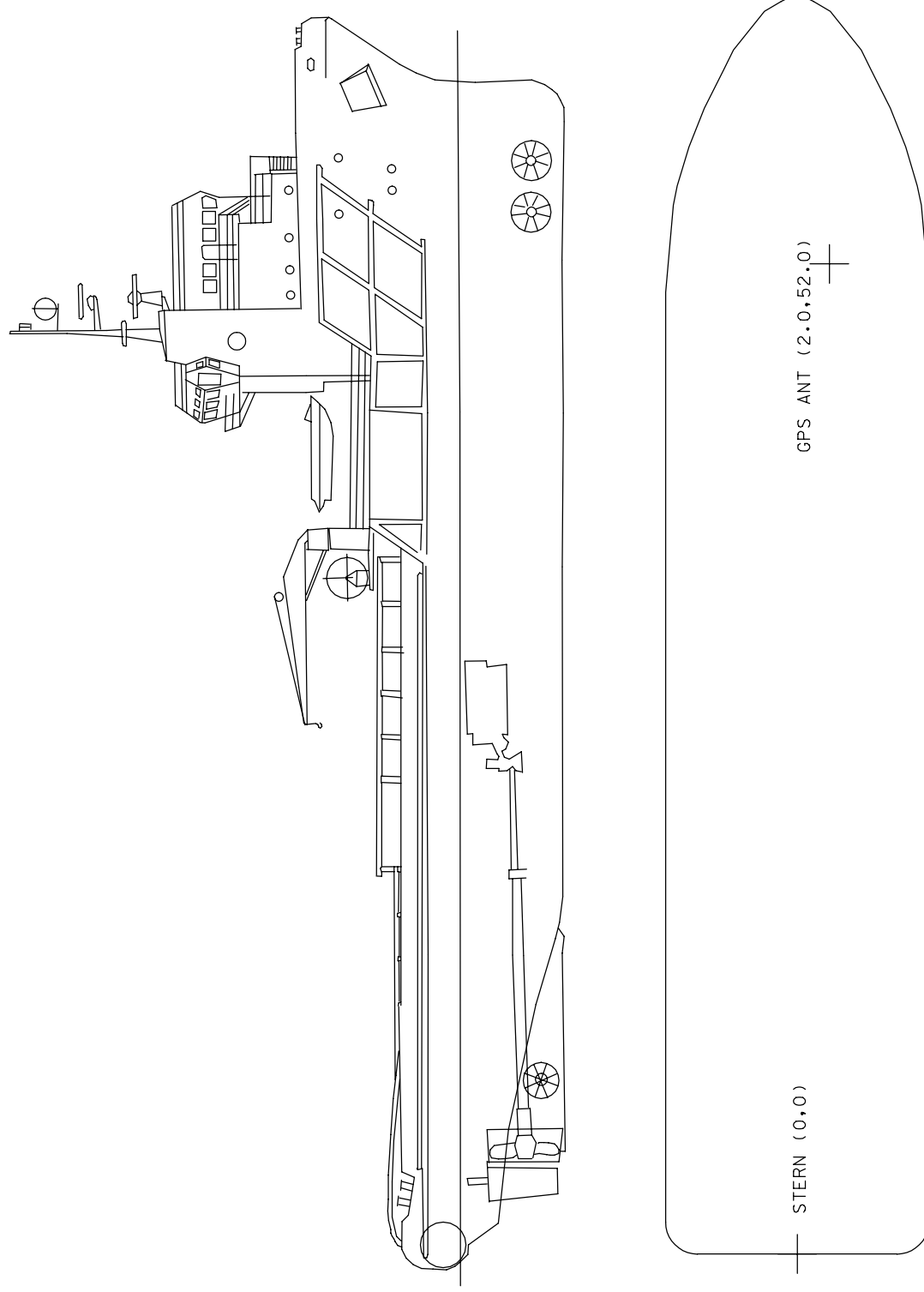






PACIFIC CONQUEROR – VESSEL OFFSET DIAGRAM

FIGURE 6



3.3 Personnel

Fugro personnel involved in this project were as follows:

A. Sarolea	Party Chief/Surveyor	29 th April to 7 th May 2001
L. Clark	Survey Technician	29 th April to 5 th May 2001

Woodside were represented during the rig move by:

A. Sellers	QC Surveyor	29 th April to 7 th May 2001
------------	-------------	--

4.0 EQUIPMENT CALIBRATIONS

4.1 DGPS Navigation Integrity Check

The primary navigation system comprised a Trimble GPS receiver and the Fugro Survey Multi Reference Differential GPS (MRDGPS) utilising reference stations at Melbourne, Bathurst and Pt Augusta. The secondary navigation system comprised of a Trimble GPS receiver with single base station direct-injection RTCM corrections, from the reference station at Melbourne.

With the rig stationary and fully anchored, the calculated datum position (drill stem) was logged for approximately thirty minutes. The calculated datum position from the primary and secondary positioning systems were then compared to each other. The two systems were found to be in good agreement.

Established Position Comparison

Established Co-ordinates	688 922.4	5 799 457.1
Observed Co-ordinates (primary navigation)	688 921.9	5 799 458.1
Differences (Established – Observed)	0.5m	-1.0m

Primary/Secondary Comparison

Primary navigation	688 921.9	5 799 458.1
Secondary navigation	688 922.4	5 799 458.1
Differences	-0.5	0.0

Please refer to Appendix C for DGPS checks.

A positioning checklist was completed to ensure that correct antenna offsets, transformation parameters and UTM central meridian were being used in all calculations. The geodetic calculations with both the online Starfix Seis navigation program and the offline GEO geodetic calculations program were also carried out.

4.2 Gyro Compass Check

The calibration of the survey gyro compass was completed on 3rd May 2001, while the rig was under tow to the Thylacine-1 location.

A series of observations were made to the sun which the rig heading was calculated. The calculated values were then compared to the observed gyro compass values logged in Starfix Seis and a mean C-O value of $+0.79^\circ$ was determined and added to the existing correction of $+199.86^\circ$ giving a final correction of $+200.65^\circ$ applied as a correction in Starfix Seis.

Details of the observations and gyro calibration reduction results are enclosed in Appendix C.

5.0 SURVEY PROCEDURES

5.1 Mobilisation

Fugro Survey personnel mobilised onto the Ocean Bounty from Perth via Melbourne on 29th April 2001. The equipment on board, which had been mobilised during previous rig moves, was powered up and checks made of all navigation systems.

Antenna offset measurement checks, DGPS checks and the gyro calibration were completed on 3rd April 2001.

All equipment and systems on the Ocean Bounty, the Pacific Sentinel and the Pacific Conqueror were tested and confirmed as operational.

5.2 General Survey Procedures

Anchor recovery at the Rig's location began on 30th April 2001. Runlines were sent to each of the vessels, via the Starfix Seis system, to assist them in chasing out the PCCs along the chains and recover the anchors. The last anchor was recovered at 1015 hrs on 1st May 2001 and the Ocean Bounty went on tow to the Thylacine-1 location.

After arriving at location at 0028 hrs on 4th May 2001, the rig deployed the #6 anchor and the Pacific Sentinel was passed the #2 anchor. The Pacific Sentinel then ran this anchor out to the desired length before lowering it to the seabed. After the Pacific Sentinel ran the primary anchors the Pacific Conqueror was released from the tow bridle. The remaining seven anchors were deployed with the last anchor in place at 0201 hrs on 5th May 2001.

For each anchor, the AHV's was given a waypoint with corresponding runline through the PCTug system and the AHV's would then run out the anchor chain along this line until the desired amount of chain, as determined by the winch's cable counter, had been paid out from the rig. The anchor chain was then stretched out and the anchor lowered to the seabed with the vessel then stripping the chain chaser back to the rig.

After deployment of the anchor spread, anchors were storm tensioned and the rig's moon pool location was positioned over the proposed Thylacine-1 location. To facilitate positioning operations, the rig's drill stem position relative to the required location was displayed on the navigation monitor, which displayed the bearing and distance from the intended location both graphically and numerically.

The Ocean Bounty was positioned over the Thylacine-1 location and all anchoring and pre-tensioning completed by 0235 hrs on 5th May 2001. Final position data was logged between 1705 hrs and 1906 hrs on 5th May 2001. A field report was issued to the Woodside Well site Manager and the Diamond Offshore OIM on 5th May 2001.

5.3 Demobilisation

All navigation systems onboard the Ocean Bounty, Pacific Conqueror and Pacific Sentinel were switched off and left mobilised ready for the next rig move.

L. Clark departed the rig on 5th May 2001, returning to Perth. A. Sarolea departed the rig on 7th May 2001, returning to Perth.

6.0 RESULTS

6.1 Final Position

The final position of the Ocean Bounty drill-stem was established by calculating the mean position from two hours of differential GPS data between 1705 hrs and 1906 hrs on 5th May 2001. During this period calculated drill-stem co-ordinates from both the primary and secondary positioning systems were logged at one second intervals in "Starfix Seis". Data from the primary positioning system was used for the final position calculation.

Differential corrections for the GPS positioning system were derived using a multi reference solution with base station data from Melbourne, Bathurst and Pt Augusta.

AGD84 geographical positions for the Thylacine-1 location are as follows:

Position	Method	Latitude	Longitude
Drill Stem @ Surface	DGPS	39° 14' 27.592" S	142° 54' 44.169" E
Proposed Location		39° 14' 27.524" S	142° 54' 43.914" E

AGD84 grid co-ordinates (CM 141° E) for the Thylacine-1 location are as follows:

Position	Method	Easting	Northing	No. Of Obs	S.Dev
Drill Stem @ Surface	DGPS	665 030.3	5 654 721.5	7260	0.3
Proposed Location		665 024.0	5 654 724.0		

This position is **6.8m** at a bearing of **111.7°** (Grid) from the proposed Thylacine-1 location.

The rig position field report and final position fix data are enclosed in Appendix D.

6.2 Rig Heading

The heading of the Ocean Bounty was established by calculating the average heading from two hours of gyro compass data between 1705 hrs and 1906 hrs on 5th May 2001. During this period gyro readings were logged at one second intervals in Starfix Seis.

The Ocean Bounty rig heading is as follows:

Description	Method	True	Grid	No. Of Obs	S.Dev
Rig Heading	Gyro	251.5°	252.7°	7260	0.2°
Proposed Heading		250.0°			

6.3 Anchor Positions

The approximate locations of the Ocean Bounty anchors are shown below. These positions are derived from a position fix on the stern of the AHV at the time of anchor deployment on the seabed. The bearing from the fairlead along each anchor leg to the AHV's stern position, was correlated with final chain lengths payed out from each anchor winch and applied tension to calculate catenary and corrected horizontal distances to each anchor buried in the seabed.

Anchor	Easting	Northing	Bearing(T)	Deployed by
1	664 875	5 653 424	186	Pacific Sentinel
2	664 240	5 653 735	219	Pacific Sentinel
3	663 857	5 654 980	280	Pacific Sentinel
4	664 435	5 655 349	315	Pacific Sentinel
5	665 249	5 655 850	10	Pacific Sentinel
6	665 938	5 655 743	42	Pacific Sentinel
7	666 233	5 654 453	100	Ocean Bounty
8	665 983	5 653 928	128	Pacific Sentinel

7.0 SAFETY

All work undertaken by Fugro personnel during the project was conducted within the guidelines of Fugro Survey's Safety Policy as defined in Fugro Survey's Safety Manual (FSSM01) and Offshore Survey Safety Practices (FSSM06).

Fugro personnel worked within project safety guidelines and plans adopted by Diamond Offshore and Woodside.

Personal safety equipment was worn throughout the project as required.

No injuries involving Fugro personnel were reported during the project.

A. Sarolea participated in a fire and abandon rig drill on 2nd and 6th May 2001 and weekly safety meeting on 2nd May 2001. L. Clark participated in a fire and abandon rig drill and weekly safety meeting on 2nd May 2001.

8.0 CONCLUSIONS AND RECOMMENDATIONS

On reviewing the Rig Move operations undertaken by Fugro Survey for the Ocean Bounty, the following conclusions have been reached:

- The Ocean Bounty was successfully positioned on location within required tolerances.

APPENDIX A

DAILY OPERATIONS REPORTS

DAILY OPERATIONS REPORT



CLIENT: <i>Woodside Energy Ltd</i>	LOCATION: <i>T/30P</i>	DATE: <i>29/30/4/01</i>
PROJECT: <i>Thylacine -1</i>	VESSEL: <i>Ocean Bounty</i>	JOB NO: <i>15597-31</i>

FROM	TO	SUMMARY OF OPERATIONS
	<i>29/4/01</i>	
<i>1700</i>		<i>A.SAROLEA Departs Perth for Melbourne. (WST)</i>
<i>1800</i>		<i>L.CLARK Checkin Hilton Hotel Melbourne</i>
<i>2300</i>		<i>A.SAROLEA Arrives Melbourne (EST)</i>
<i>2330</i>		<i>Checkin Hilton Melbourne.</i>
<i>EST</i>		<i>30/4/01</i>
<i>0600</i>		<i>Depart Melbourne Hilton for West Sale</i>
<i>0930</i>		<i>Depart West Sale for Rig</i>
<i>1030</i>		<i>Arrive Rig</i>
<i>1100</i>		<i>Power Up Navigation Systems.</i>
<i>1126</i>	<i>1219</i>	<i>Logging Data for DAPS check.</i>
<i>1142</i>		<i>Commence Recovery of Anchors at Northright-1</i>
	<i>2400</i>	<i>ANCHOR Recovery Continuing</i>

EQUIPMENT	No.	EQUIPMENT	No.	PERSONNEL	TITLE
<i>Starfix Seis</i>	<i>2</i>	<i>AHV's Each</i>		<i>A.SAROLEA</i>	<i>PC/SURV</i>
<i>Monitors</i>	<i>5</i>	<i>PCTUG</i>	<i>1</i>	<i>L.CLARK.</i>	<i>TECH</i>
<i>TRIMBLE</i>	<i>2</i>	<i>Monitor</i>	<i>1</i>		
<i>GYRO</i>	<i>2</i>	<i>Fluxgate</i>	<i>1</i>		
<i>DEMOS</i>	<i>4</i>	<i>PSU</i>	<i>2</i>		
<i>Modem</i>	<i>2</i>	<i>VBS-EDU</i>	<i>1</i>		
<i>Theodolite</i>	<i>1</i>	<i>Modem</i>	<i>1</i>		

VEHICLES:

CONSUMABLES:

ACCOMMODATION: *Ocean Bounty / Hilton Melbourne.*

AUTHORISED CONTRACT CHANGES/COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
<i>Sarolea</i>	<i>Alan Siller</i>	<i>10557</i>

DAILY OPERATIONS REPORT



CLIENT: <i>Woodside Energy Ltd</i>	LOCATION: <i>T/30P</i>	DATE: <i>1st + 2nd / 5/01</i>
PROJECT: <i>Thylacine -1</i>	VESSEL: <i>Ocean BOUNTY</i>	JOB NO: <i>15597-31</i>

FROM	TO	SUMMARY OF OPERATIONS
		<i>1/5/01</i>
<i>0000</i>		<i>ANCHDR RECOVERY CONTINUING</i>
<i>1015</i>		<i>Last ANCHOR Racked Rig ON Tow</i>
<i>2400</i>		<i>Rig on Tow to Thylacine -1</i>
		<i>2/5/01</i>
<i>0000</i>		<i>Rig on Tow</i>
<i>2230</i>	<i>2245</i>	<i>Personnel Attend FIRE + Abandon Rig Drill</i>
<i>2400</i>		<i>Rig Continuing to Thylacine -1</i>
		<i>3/5/01</i>
<i>0000</i>		<i>ON Tow to Location</i>
<i>0100</i>	<i>0530</i>	<i>Replace Main Seis Computer + RECONFIGURE SPARE</i>
<i>0709</i>	<i>0738</i>	<i>Logging Data for Sun observation</i>
	<i>2245</i>	<i>Pacific Sentinel off Stbd Tow</i>
<i>2325</i>		<i>ON FINAL RUN IN 220° @ 3Nm.</i>

EQUIPMENT	No.	EQUIPMENT	No.	PERSONNEL	TITLE

*AS PER
DOR
10557*

VEHICLES:	
CONSUMABLES:	
ACCOMMODATION: <i>Ocean BOUNTY</i>	
AUTHORISED CONTRACT CHANGES/COMMENTS:	

Party Chief Signature:	Client Representative Signature:	D O R Number
<i>Ardea</i>	<i>Alfredus</i>	10558

DAILY OPERATIONS REPORT



CLIENT: Woodside Energy Ltd	LOCATION: T/30P	DATE: 4/5/01
PROJECT: Thylacine -1	VESSEL: Ocean Bounty	JOB NO: 4415597-31

FROM	TO	SUMMARY OF OPERATIONS
0000		Rig ON FINAL RUN IN @ 220°
0028		#6 ANCHOR Deployed by Rig
0157		#2 ANCHOR on Bottom
0321		#2 ANCHOR ON Bottom - Rerun
0448	0610	#7 ANCHOR ON Bottom
0748		#3 ANCHOR ON Bottom
1003	1250	Commence Ballasting Rig to 56ft Draft.
1250		Recommence ANCHOR Deployment at Thylacine-1
1417		#1 ANCHOR ON Bottom
1412		Ballasting Completed.
1541		#8 ANCHOR ON Bottom
1630		#8 ANCHOR ON Bottom - Rerun
1917		#4 ANCHOR ON Bottom
2033		#5 ANCHOR ON Bottom
2059		AHV's Having trouble Returning PCC
2128		AHV's Reports Fouled PCC around ANCHOR.
2340		AHV's Reports PCC Removed Damaged WIRE
2345		Commence Heaving IN #5 Anchor

EQUIPMENT	No.	EQUIPMENT	No.	PERSONNEL	TITLE

AS PER
DOR # 10557

VEHICLES:	
CONSUMABLES:	
ACCOMMODATION:	

AUTHORISED CONTRACT CHANGES/COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		10559



FUGRO

FSv030

FSv030

APPENDIX B

PROJECT COORDINATE LISTINGS AND ANCHORING PROCEDURES

WELL LOCATION DATA and SITE APPRAISAL SHEET

LOCATION NAME: THYLACINE-1			
Permit:	T/30P	Graticular Block:	Map Ref: SJ 54 Block 2795
Survey Data Compiled By:	N Harrison & A Lane	Permit Coordinator:	<i>M. R. Gurnell</i> v/l
Manager Geomatics:	<i>[Signature]</i>	Drilling Eng:	<i>[Signature]</i>
Date:	22/3/01.	Date:	
AMG/GEOGRAPHICAL VALUES:			
Easting:	665 024	Latitude:	039° 14' 27.524" (S)
Northing:	5,654 724	Longitude:	142° 54' 43.914" (E)
Horiz Datum:	AGD 84	CM:	141° (E) Zone 54
Sea Surface Tolerance:	50 m	Direction:	Radial
Water Depth:	100m +/- 5m	Datum:	LAT
Proposed Heading:	TBA	Origin:	Seismic
COORDINATES DERIVED FROM:			
Survey:	Investigator 3D	Date:	March 2000
InLine:	700	Xline:	1200
Comments:			
Contractor:	Western Geophysical		
PROPOSED RIG:			
Name:	Ocean Bounty	Type:	Semi Submersible
Anchors:	Moor Fast		
SITE APPRAISAL:			
Evaluation Basis	Offset Wells, regional bathymetry trends and Investigator 3D.		
Recommendations and Conclusions	<ul style="list-style-type: none"> A dedicated site survey for conventional exploration drilling is considered unjustified for Thylacine. Difficulty in anchoring was experienced in the Pecten Well. This lies close inshore in shallow water. All other wells experienced no problems in relation to foundations and anchor holding (numerous hardware failures however occurred). Offset wells Minerva-1 and 2, Eric the Red-1, Loch Ard-1 and LaBella-1 were all covered by site surveys. Offset wells Minerva-1 and 2, Eric the Red-1, Loch Ard-1 and LaBella-1 drilled by BHP all used pilot wells. Seafloor sediment is predicted to be Port Campbell Limestone, which varies between a fossiliferous marl and calcarenite. (The caprock problems at Pecten probably were result of increased cementation at the recently exposed seafloor). No shallow gas was detected in the offset wells. Review of Investigator 3D data suggests a very low probability of encountering shallow gas. From the offset well information the unconformity to the consolidated Port Campbell Limestone varies between being exposed on the seafloor and 12m below the seabed. Port Campbell Limestone has been interpreted as calcarenite and as calcarenite and marl. This material is certainly quite firm and shows infilled channels and interpreted faulting, folding and near to La Bella a "buried reef" structure. Lateral and vertical variations in cementation probable. 		
Water Depth	Location : 100m (from seismic survey) Regional : 98 to 102m (within 1000m radius of location)		
Seafloor Obstructions	<ul style="list-style-type: none"> No site specific survey data. Anticipate gently sloping seafloor with at best a thin veneer of carbonate sand on cemented / consolidated material. Location lies on the regional smooth continental shelf to the north of the shelf slope. However localised seafloor rugosity is expected over the outcrops. In comparison to Geographe possibly decreased sediment cover. 		

Anchoring Conditions	<ul style="list-style-type: none"> No site specific survey data. Offset well Pecten-1 encountered cemented seafloor and used anchor piles. All other wells in the area were drilled without foundation difficulties. Anticipate moderate anchor holding with flukes penetrating into the weak Port Campbell Limestone.
Spud Can Prediction	NA
Guide Base Stability	<ul style="list-style-type: none"> No site specific survey data. Seafloor anticipated as thin layer of surficial sand overlying the Port Campbell Limestone. Minimal Guide Base Penetration is anticipated. Local seafloor undulations may occur at rock outcrops. Adjacent surveys and seafloor character from the exploration seismic indicates firm material near to the seafloor will provide a high degree of lateral and vertical support for the conductor. Conductor and Guide Base stability for "throw away well" is anticipated as adequate based on the firm nature of the Port Campbell Limestone and offset well performance.
Shallow Gas	<ul style="list-style-type: none"> No site specific survey data. Pilot holes were drilled to the base of Campbell Limestone for all the recent BHP wells. No gas was encountered. Seismic Data characterised by lack of shallow anomalies. Some increased reflectivity present in base of well-marked erosion channels below approx 500ms interpreted as lithology / tuning and not gas charging. Main channel system at around 500ms appears to be aligned to the faulting.
Adjacent Wells	<p>La Bella-1 Drilled in 1993 using semi-submersible rig Byford Dolphin approx 30 km to northwest. Two anchors were lost due to equipment failure. Pilot hole drilled to 630m (RT) did not locate shallow gas.</p> <p>Mussel-1 Drilled in 1969 approx 30 km to northwest</p> <p>Conan-1 Drilled in 1995 by Ocean Bounty approx 42 km to northwest Anchors soaked for 7 ½ hours and then pre-tensioned to 400 kips.</p> <p>Minerva-1 Drilled in 1993 using semi-submersible rig Byford Dolphin approx 60 km to north. Pilot hole drilled to 560m (RT). All anchors problems but not due to seafloor conditions. No gas indications observed.</p> <p>Minerva-2 Drilled in 1993 using semi-submersible rig Byford Dolphin approx 60 km to north. Pilot hole drilled to 560m (RT). No gas indications observed. Rig skidded 35m to Minerva-2A and re-spudded. No pilot hole.</p> <p>Pecten-1/1A Drilled in 1967 by Sedco 135E approx 65km to northwest. Anchoring failed on cemented crust. Six anchor piles installed.</p> <p>Nautilus-1 Drilled in by Ocean Digger in 1968 approx 45 km to northwest</p> <p>Triton-1/1st Drilled by Southern Cross in 1982 approx 45 km to northwest</p> <p>Prawn-1 and 1A Drilled by Esso approx 20 km in 1967 southeast.</p> <p>Loch Ard-1 Drilled by Byford Dolphin in 1993 approx 40 km to northeast Pilot Hole drilled to 388m, no gas encountered</p> <p>Eric The Red-1 Drilled in 1993 by Byford Dolphin approx 35 km to northeast. Pilot Hole drilled to 370m, no gas encountered. Anchor #3 re-run.</p>

Offset Site Surveys	<p>Conan Seafloor contains outcrops of calcarenite and patches of sand veneer containing debris from the underlying calcarenite Sub Tow Boomer Acoustic penetration about 15m. The sub bottom material shows (3 or more) gently dipping horizons interpreted as more cemented layers (probably calcarenite) within a sequence of marl to weak calcarenite. Cementation described as variable throughout the site with some areas having poor signal penetration. All material is described as cemented or consolidated.</p> <p>Eric the Red Seafloor comprises rippled carbonate sands. Sub Tow Boomer acoustic penetration about 12m. Area interpreted as a 6m thick of coarse shelly sand overlies weakly consolidated sand. At about 12m unconformable erosive surface to faulted and folded material. High resolution seismic suggested the upper 200m comprises a bioclastic calcarenite (Port Campbell Limestone) over Gellibrand Marl of the Heytesbury Group)</p> <p>Loch Ard Seafloor comprises sand waves and megaripples, shell, carbonate sand and gravel with exposed calcarenite patches. Sub Tow Boomer acoustic penetration about 8m. Surface layer about 4m thick of unconsolidated carbonate sand overlies erosive unconformity to a channelled sequence of folded and faulted material</p> <p>La Bella Seafloor comprises flat-topped rock outcrops separated by narrow gullies. Steep sided small seafloor depressions ("pits") interpreted as solution depressions. Very rugose seafloor. Locally veneer of coarse-grained sands with megaripples drapes depressions. Faulting indicated at seafloor. Sub tow boomer acoustic penetration about 5m. Material interpreted as calcarenite / limestone. Near seafloor sediments comprise Port Campbell Limestone. Local buried reef interpreted at about 20m sub seabed</p>
Seismic Data	<p>Good quality shallow exploration data from the Investigator 3D.</p>

3.0 Anchor Deployment at Thylacine-A

J. Kinniburgh

3.1 The following mooring plan shall apply for the Thylacine-A location.

3.2 Rig Heading = 250° True. Water depth at location = 100 m (328 ft)

Anchor No.	Bearing	Distance	Anchor No.	Bearing	Distance
1	190°	4500 ft	2	220°	4500 ft
3	280°	4500 ft	4	310°	4500 ft
5	010°	4500 ft	6	040°	4500 f
7	100°	4500 ft	8	130°	4500 ft

- 3.4 Mooring pattern is the standard 30/60 pattern.
- 3.5 The tow vessel shall slow down and shorten the tow prior to turning on to the final run-in line.
- 3.6 During the deployment of the primary anchors the OIM or his deputy shall be present in the pilot house to coordinate operations.
- 3.7 Prior to reaching location the OIM shall conduct a radio conference between the rig and vessel masters. Rig personnel to attend shall be the Rig Superintendent, the Rig Barge Master, Company Representative, Survey Representative and the Fugro Surveyor. Any variation required to the rig move procedure shall be discussed at this time.
- 3.8 The rig is to be towed to a position 3 nm at 040° from the No.6 intended anchor drop location where it will be lined up on a bearing of 220° for the run into to the No.6 drop location.
- 3.9 Pay out No.6 anchor until the anchor is hanging 50ft off the bottom. Minimum water depth during run in is expected to be 100m (328ft)
- 3.10 Deploy the No.6 anchor as the rig passes over the intended drop location. Continue to tow the rig towards the wellhead location, as chain is payed out. Maximum approach speed 2.0 knots once the No.6 anchor has been deployed.
- 3.11 The pilot house and winch operator shall check the chain paid out and tensions of the No.6 anchor as the rig is towed towards the well location.
- 3.12 The rig is stopped when reaching the proposed well location.
- 3.13 While the rig is held over the location by the tow vessel pass the no. 2 pennant to the AHV and run No.2 anchor.
- 3.14 Run the no. 7 or no. 3 anchor depending on the rig position over location. Then run the remaining primary anchor (3 or 7)
- 3.15 Run secondary anchors No.1 at 190°, No.4 at 310°, No.5 at 010° and the No.8 at 130°.
- 3.16 Position rig and pretension all anchors to 410 kips for a period of 10 minutes.
- 3.17 Make any necessary adjustments to rig position.
- 3.18 Ballast rig to drilling draft. Anchor tensions to be maintained at 300 kips until the BOP stack has been run.

Note: The following may be possible if agreed by all parties. Rig to run 4 primary anchors. Anchor operation to cease. Rig to be ballasted to 56.5' draft. Drilling operations to commence within rig safety stability envelope. Secondary anchors to be run at deep draft. Pretension to 410 Kips, drop back to 300 Kips until stack landed.

Prepared by:

David Daron - DOGC

Reviewed By:

Murray Jackson - Woodside

Frank Barker - Woodside

Tom O'Neill - DOGC

1/5/01

APPENDIX C

DGPS AND GYRO CHECKS

RIG POSITIONING GEODESY AND COORDINATE CHECK LIST



CLIENT : Woodside Energy Ltd
RIG : Ocean Bounty
PROJECT : Rig move to Thylacine-1 location T/30P

JOB NO. : HY15597-31
DATE : 30th April 2001

1. CONFIRMATION OF PROPOSED RIG COORDINATES and HEADING.

Well Name	Thylacine-1	Ensure agreement with Client onsite prior to any positioning Operations. OK (?) Y / N.
Well Location - Latitude	39°14'27.524"S	
Well Location - Longitude	142°54'43.914"E	
Rig Heading (True)	250°	

2. GEODETIC PARAMETERS (WGS84 to LOCAL DATUM)

DATUM:	Dx	116.000	Ensure agreement with Client onsite prior to any positioning Operations.
(WGS84 to	Dy	50.470	OK (?) Y / N.
Local Datum)	Dz	-141.690	
	Rx	0.2300	
Projection:	Ry	0.3900	
	Rz	0.3440	
	Ds	-0.0983ppm	
UTM Zone		54	
Central Meridian		141°E	

3. CHECK TRANSFORMATION OF SITE COORDINATES.

Well Location - Easting	665 024.27	Ensure agreement with PCNav / Starfix Seis. OK (?) Y / N
Well Location - Northing	5 654 723.72	If not, CHECK and RECALC.
Convergence at Location	+1.21°	
Rig Heading (Grid)	251.21°G	

4. MEAS. ANT. OFFSETS from ANT. TO D/STEM (Rel. to Datum)

	NAV #1 SYSTEM		NAV #2 SYSTEM	
(Measure two (2) separate directions, verifying closure.)	(1 st Way)	(2 nd Way)	(1 st Way)	(2 nd Way)
Delta X	0.3	0.3	-1.30m	-1.30m
Delta Y	33.95	33.95	39.02m	39.02m
Angle between Rig Centreline and Antenna(s) (Grid)	0.506	0.506	-1.908	-1.908
Distance between Drill Stem and Antenna(s)	33.95	33.95	39.04	39.04

5. MANUAL COORDINATE VERIFICATION FOR ANTENNAS

		Nav System #1	Nav System #2
Proposed Drill Stem Position	Easting	665 024.27	
	Northing	5 654 724.72	
Drill Stem to Antenna	Proposed Hdg (G)	251.21°	
	Brg (G) = Prop. Hdg. + Angle btwn centreline and antenna	251.716°	249.302°
	Distance (m)	33.95m	39.04m
Calculated Antenna Coordinates (Local)	Easting	664 992.03	664 987.75
	Northing	5 654 713.07	5 654 709.92
	Latitude	39° 14'27.8914"S	39°14'27.9964"S
	Longitude	142°54'42.5794"E	142°54'42.4035"E
Calculated Proposed Antenna Coords (WGS 84)	Latitude	39° 14'22.5898"S	39° 14'22.6948"S
	Longitude	142°54'47.5611"E	142°54'47.3852"E

Surveyor : *Arslan*

Client Rep : *Alf J. J.*

Date : 2/5/01

6. POST RIG MOVE - OBSERVED ANTENNA COORD

		NAV.SYS #1	NAV.SYS #2
WGS84	ANTENNA	39° 14' 22.662 "S	39° 14' 22.781 "S
	Latitude	142°54' 47.805 "E	142°54' 47.362 "E
	Longitude		

Ensure agreement between calculated and observed coordinates. If NO, check calcs., antenna offsets, Gyro. OK (?) Y / N

Surveyor : *Arslan*

Client Rep : *Alf J. J.*

Date : 5/5/01

RIG POSITIONING DGPS CHECK LIST (PRE RIG MOVE)



CLIENT: Woodside Energy Ltd JOB No. HY15597-31
RIG : Modu Ocean Bounty DATE: 30th April 2001
PROJECT: Rig move to Thylacine-1 Location T/30-P

1. ESTABLISHED WELL COORDINATES

Observe 15-30 minutes of DGPS data, logging both Primary and Secondary navigation systems. Establish a mean drill stem position from the primary navigation system and compare against the established well coordinates.

	EASTING	NORTHING
Established Well Coordinates	688 922.4	5 799 457.1
Observed Coordinates	688 921.9	5 799 458.1
Differences	0.5	-1.0

Ensure agreement OK(?) Y / N
If No, Check and ensure that rig has not moved off location.

2. PRIMARY/SECONDARY NAV SYSTEMS

From the data logged above, compare the observed coordinates for both Primary and Secondary navigation systems.

	EASTING	NORTHING
Primary Navigation	688 921.9	5 799 458.1
Secondary Navigation	688 922.4	5 799 458.1
Differences	-0.5	0.0

Ensure agreement OK(?) Y / N
If No, Check antenna offsets and gyro calibration.

Surveyor: *Goolea*

Date: 2/5/01

Client Rep: *Alan Allen*

SUNSHOT REPORT

1) Fugro Survey
Sunshot Report
SUNSHOT V1.04.04 12/2/1998 06:48:17 03 May 2001

*
UT Date : 02 May 2001 Latitude : 39 12 43.0 South
UT Time : 21:25:38 Longitude : 144 43 43.0 East

Right Ascension : 040 04 43 Altitude : 02 42 02
Greenwich Hour Angle : 142 10 57 Refraction : 09 37 (1000 mb)
Local Hour Angle : 286 54 40 Parallax : 08 (25 øC)
Declination : 15 35 45 North Obs Alt : 02 51 31
Azimuth : 067 18 09 Dip Angle : 06 48 (15 m)
Semi-Diameter : 15 53 Obs Sext Angle : 02 58 19
Observed Angle : 159 43 00 Final Azimuth : 267 35 09

*
2) Fugro Survey
Sunshot Report
SUNSHOT V1.04.04 12/2/1998 06:50:49 03 May 2001

*
UT Date : 02 May 2001 Latitude : 39 12 43.0 South
UT Time : 21:26:44 Longitude : 144 43 34.4 East

Right Ascension : 040 04 46 Altitude : 02 53 43
Greenwich Hour Angle : 142 27 27 Refraction : 10 22 (1000 mb)
Local Hour Angle : 287 11 01 Parallax : 08 (15 øC)
Declination : 15 35 46 North Obs Alt : 03 03 56
Azimuth : 067 07 33 Dip Angle : 06 48 (15 m)
Semi-Diameter : 15 53 Obs Sext Angle : 03 10 44
Observed Angle : 160 25 00 Final Azimuth : 266 42 33

*
3) Fugro Survey
Sunshot Report
SUNSHOT V1.04.04 12/2/1998 06:52:10 03 May 2001

*
UT Date : 02 May 2001 Latitude : 39 12 43.1 South
UT Time : 21:27:24 Longitude : 144 43 29.6 East

Right Ascension : 040 04 47 Altitude : 03 00 47
Greenwich Hour Angle : 142 37 27 Refraction : 10 29 (1000 mb)
Local Hour Angle : 287 20 56 Parallax : 08 (15 øC)
Declination : 15 35 47 North Obs Alt : 03 11 07
Azimuth : 067 01 07 Dip Angle : 06 48 (15 m)
Semi-Diameter : 15 53 Obs Sext Angle : 03 17 56
Observed Angle : 160 46 00 Final Azimuth : 266 15 07

*
4) Fugro Survey
Sunshot Report
SUNSHOT V1.04.04 12/2/1998 06:52:57 03 May 2001

*
UT Date : 02 May 2001 Latitude : 39 12 43.2 South
UT Time : 21:28:12 Longitude : 144 43 23.5 East

Right Ascension : 040 04 49 Altitude : 03 09 16
Greenwich Hour Angle : 142 49 27 Refraction : 10 32 (1000 mb)
Local Hour Angle : 287 32 50 Parallax : 08 (15 øC)
Declination : 15 35 47 North Obs Alt : 03 19 40
Azimuth : 066 53 24 Dip Angle : 06 48 (15 m)
Semi-Diameter : 15 53 Obs Sext Angle : 03 26 28
Observed Angle : 160 52 00 Final Azimuth : 266 01 24

*
5) Fugro Survey
Sunshot Report

SUNSHOT REPORT

SUNSHOT V1.04.04 12/2/1998 06:53:54 03 May 2001

*

UT Date : 02 May 2001 Latitude : 39 12 43.4 South
UT Time : 21:30:41 Longitude : 144 43 06.5 East

Right Ascension	: 040 04 55	Altitude	: 03 35 33
Greenwich Hour Angle	: 143 26 42	Refraction	: 10 23 (1000 mb)
Local Hour Angle	: 288 09 48	Parallax	: 08 (15 øC)
Declination	: 15 35 49 North	Obs Alt	: 03 45 47
Azimuth	: 066 29 20	Dip Angle	: 06 48 (15 m)
Semi-Diameter	: 15 53	Obs Sext Angle	: 03 52 36
Observed Angle	: 157 47 40	Final Azimuth	: 268 41 40

*

6) Fugro Survey
Sunshot Report

SUNSHOT V1.04.04 12/2/1998 06:55:24 03 May 2001

*

UT Date : 02 May 2001 Latitude : 39 12 43.4 South
UT Time : 21:31:47 Longitude : 144 42 58.0 East

Right Ascension	: 040 04 58	Altitude	: 03 47 09
Greenwich Hour Angle	: 143 43 12	Refraction	: 10 13 (1000 mb)
Local Hour Angle	: 288 26 10	Parallax	: 08 (15 øC)
Declination	: 15 35 50 North	Obs Alt	: 03 57 14
Azimuth	: 066 18 39	Dip Angle	: 06 48 (15 m)
Semi-Diameter	: 15 53	Obs Sext Angle	: 04 04 03
Observed Angle	: 159 36 30	Final Azimuth	: 266 42 09

*

7) Fugro Survey
Sunshot Report

SUNSHOT V1.04.04 12/2/1998 06:59:39 03 May 2001

*

UT Date : 02 May 2001 Latitude : 39 12 43.5 South
UT Time : 21:32:34 Longitude : 144 42 51.9 East

Right Ascension	: 040 05 00	Altitude	: 03 55 24
Greenwich Hour Angle	: 143 54 57	Refraction	: 10 06 (1000 mb)
Local Hour Angle	: 288 37 49	Parallax	: 08 (15 øC)
Declination	: 15 35 50 North	Obs Alt	: 04 05 21
Azimuth	: 066 11 02	Dip Angle	: 06 48 (15 m)
Semi-Diameter	: 15 53	Obs Sext Angle	: 04 12 10
Observed Angle	: 159 47 40	Final Azimuth	: 266 23 22

*

APPENDIX D

FINAL POSITIONING DATA

RIG POSITION - FIELD REPORT



THYLACINE-1 LOCATION

CLIENT: WOODSIDE ENERGY LTD

JOB NO.: HY15597-31

RIG: Modu Ocean Bounty

DATE: 5TH May 2001

PROJECT: Rig Position at Thylacine-1 location,
T/30P Otway Basin, Australia.

ATTN: M. Jackson (Woodside Well Site Manager)

CC: D. Deron (OIM Ocean Bounty)

The final location of the drill stem on the Ocean Bounty was derived from two hours of observations of the Primary Differential GPS data, on completion of all anchor pre-tensioning and cementation of 30' casing. The results of the observations are as follows:

Geographical Coordinates		Grid Coordinates	
Latitude	39° 14' 27.592" S	Easting	665 030.3 m
Longitude	142° 54' 44.169" E	Northing	5 654 721.5 m

The drill stem position is 6.8m at a bearing of 111.7° (Grid) from the design location.

The Client supplied design location for Thylacine-1 :

Geographical Coordinates		Grid Coordinates	
Latitude	39° 14' 27.524" S	Easting	665 024.0 m
Longitude	142° 54' 43.914" E	Northing	5 654 724.0 m

The Ocean Bounty rig heading, derived from the mean of two hour's observation of the gyro heading is:

251.5° True (252.7° Grid)

All coordinates in this field report are quoted in the following coordinate system:

Datum : AGD 84 Projection : UTM
Spheroid : ANS Zone (Central Meridian) : 54(141°)

The approximate positions of the rig anchors corrected for catenary are as follows:

Anchor	Easting	Northing	Bearing(°)
1	664 875m	5 653 424m	186°
2	664 240m	5 653 735m	219°
3	663 857m	5 654 980m	280°
4	664 435m	5 655 349m	315°
5	665 249m	5 655 850m	010°
6	665 938m	5 655 743m	042°
7	666 233m	5 654 453m	100°
8	665 983m	5 653 928m	128°

Party Chief: A. Sarolea
A. Sarolea(Surveyor)

Client Representative : A. Sellers
A.Sellers (Survey Representative)

FINAL POSITIONING REPORT – 5TH MAY 2001 – THYLACINE-1

FINAL POSITIONING DATA 05/05/2001 00:00:00 UTC

*** FUGRO SURVEY STARFIX.SEIS ***

Header : Location : T/30P
Project Number : HY15597-31
Client : WOODSIDE ENERGY LTD
Client Representative : A. SELLERS
Client Reference Number : HY15597-31
Project Description : RIG MOVE TO THYLACINE-1
Geophysical Contractor : Fugro
Positioning Contractor : Fugro
Positioning Processing Contractor: Fugro
Setup By : A. SAROLEA & L CLARK
On : 04/05/2001 16:27:30 UTC
Time Offset : 10:00 (Using UTC)
Vessel : OCEAN BOUNTY

Files Runline : (None)
Centreline : (None)
Database : (None)
Waypoint : \\PRINT_SERVER\REPORT\HY15597\THYLACINE-1\SEIS-
FILES\thylacine-1.swy

Logging: Directory : \\PRINT_SERVER\REPORT\HY15597\THYLACINE-1\LOG\
Fix Only : No
Depths : All Depths
O/Ts : 0 1 2 3 4 5
Nav. 1 : Yes (Raw and position)
Nav. 2 : Yes (Raw and position)
Nav. 3 : No
Nav. 4 : No
Nav. 5 : No
Nav. 6 : No
Nav. 7 : No

Fixing : Mode : Time
Fix Interval : 10.000s
Reset at SOL : No
Next Fix No. : 188
Fix Increment : 1
Start FFID : 1
Start Man. Fix: 1
Early Start : 60s
Logging Start : 30s

Datum 1: Datum : AGD84 (Australia-Higgins)
Spheroid : Australian National
SemiMajor Axis: 6378160.000
1/Flattening : 298.250000000
Eccentricity^2: 0.0066945419

Projection : Transverse Mercator (UTM)
Grid Name :
Lat. Origin : 0d00'00.0000"N
Lon. Origin : 141d00'00.0000"E
False East : 500000.000m
False North : 1000000.000m
Scale Factor : 0.9996
Convergence : Australia/New Zealand

Datum 2: Datum : WGS 84
Spheroid : WGS 84
SemiMajor Axis: 6378137.000
1/Flattening : 298.257223563
Eccentricity^2: 0.0066943800

Datum2>1:Parameters : From WGS84 to AGD84 (Australia-Higgins)
DX : 116.0000m RX : 0.2300"
DY : 50.4700m RY : 0.3900"
DZ : -141.6900m RZ : 0.3440"
D Scale : -0.0983ppm Rot Convention: +RZ=-RLongitude

Sundry : Vertical Datum:

FINAL POSITIONING REPORT – 5TH MAY 2001 – THYLACINE-1

Ell. Sep. : 0.0000m
 Distances : Spheroidal
 Bearings : True
 Units : metres
 Conversion : 1.0000000000

Main Vessel : OCEAN BOUNTY
 : \\PRINT_SERVER\REPORT\HY15597\THYLACINE-1\SEIS-FILES\OCEAN
 BOUNTY.SVS

Nav. 1 : System : MRDGPS1 (In Use)
 Type : Lat - Long
 Priority : 1
 Time-out : 5.0s
 X Offset : 0.30m
 Y Offset : 33.95m
 Ant. Height : 0.00m

Nav. 2 : System : DIR-INJ
 Type : Lat - Long
 Priority : 2
 Time-out : 5.0s
 X Offset : -1.30m
 Y Offset : 39.02m
 Ant. Height : 0.00m

Dead Reckoning: No Timeout: 30.0s

Gyro 1 : System : NMEA Gyro.HDT (In Use)
 Priority : 1
 Time-out : 3.0s
 Correction : 200.65 Degrees

Offsets: Name	X	Y
#1	-42.50	12.50
#2	-42.50	16.50
#3	42.50	16.50
#4	42.50	12.50
#5	42.50	-12.50
#6	42.50	-16.50
#7	-42.50	-16.50
#8	-42.50	-12.50
NAV1 ANT	0.30	33.95
Nav2 ant	-1.30	39.02

Fairlead:Name	X	Y
#1	-42.50	12.50
#2	-42.50	16.50
#3	42.50	16.50
#4	42.50	12.50
#5	42.50	-12.50
#6	42.50	-16.50
#7	-42.50	-16.50
#8	-42.50	-12.50

Secondary Vessel 1 : Pacific Conquero
 : \\PRINT_SERVER\REPORT\HY15597\THYLACINE-1\SEIS-
 FILES\conqueror.SVS

Nav. 1 : System : Tug01 (In Use)
 Type : Lat - Long
 Priority : 1
 Time-out : 15.0s
 X Offset : 0.00m
 Y Offset : 0.00m
 Ant. Height : 0.00m

Dead Reckoning: No Timeout: 30.0s

Gyro 1 : System : Tug01 (In Use)
 Priority : 1
 Time-out : 15.0s
 Correction : 0.00 Degrees

Offsets: Name	X	Y	Z
GPS-ANT	1.75	52.50	0.00

Secondary Vessel 2 : Pacific Sentinel

FINAL POSITIONING REPORT – 5TH MAY 2001 – THYLACINE-1

FILES\sentinel.SVS : \\PRINT_SERVER\REPORT\HY15597\THYLACINE-1\SEIS-

Nav. 1 : System : Tug02 (In Use)
Type : Lat - Long
Priority : 1
Time-out : 15.0s
X Offset : 0.00m
Y Offset : 0.00m
Ant. Height : 0.00m

Dead Reckoning: No Timeout: 30.0s

Gyro 1 : System : Tug02 (In Use)
Priority : 1
Time-out : 15.0s
Correction : 10.00 Degrees

Offsets: Name	X	Y	Z
GPS-ANT	2.00	52.00	0.00

O/Ts : Steered Point: O/T 0
Shot : O/T 0

O/T 0	PR LG CRP	Pos Sys: Vessel 01	:Datum In-Use
O/T 1	PR LG SECOND DATUM	Pos Sys: Ves. 01 Nav 02	:DIR-INJ Datum
O/T 2	PR LG NAV1 Antenna	Pos Sys: Ves. 01 Nav 01	:MRDGPS1 Antenna
O/T 3	PR LG NAV2 Antenna	Pos Sys: Ves. 01 Nav 02	:DIR-INJ Antenna
O/T 4	PR LG CONQUEROR	Pos Sys: Ves. 02 Nav 01	:Tug01 Datum
O/T 5	PR LG SENTINEL	Pos Sys: Ves. 03 Nav 01	:Tug02 Datum

O/T Legend: PR=Print LG=Log SN=Snap to line

Waypoint : THYLACINE-1
Position : 39d14'27.5154"S 142d54'43.9026"E 0.0m
665024.0mE 5654724.0mN 0.0m

Printing:

Fix mark rate : 1
Weather Device : (None)
Weather Interval: 60 minutes
Weather Enabled : No
Config Changes : No
System Timeouts : No

Software:Nav Ver 2.04.09
NavEngine Ver 2.04.09
Display Ver 2.06.04
Anchors Ver 2.04.03
Print Ver N/A

05/05/2001 06:58:00 UTC
*** FUGRO SURVEY STARFIX.SEIS ***

Fixing : Mode : Time
Fix Interval : 10.000s
Reset at SOL : No
Next Fix No. : 200
Fix Increment : 1
Start FFID : 200
Start Man. Fix: 2
Early Start : 60s
Logging Start : 30s

Time 07:04:52.8 UTC 05/05/2001
Waypoint : THYLACINE-1
Position : 39d14'27.5154"S 142d54'43.9026"E 0.0m
665024.0mE 5654724.0mN 0.0m

First Fix/FFID: 200/ 200 Time 07:04:54.0 UTC 05/05/2001

FINAL POSITIONING REPORT – 5TH MAY 2001 – THYLACINE-1

Nav. 1 MRDGPS1 39d14'27.5780"S 142d54'44.1671"E 18.19m (datum - local)
 665030.30m 5654721.94m
 (In Use) 39d14'22.6247"S 142d54'47.8057"E 0.00m (antenna - WGS84) PDOP:
 2.3

Nav. 2 DIR-INJ 39d14'27.6024"S 142d54'44.1438"E 18.19m (datum - local)
 665029.73m 5654721.20m
 39d14'22.7516"S 142d54'47.6041"E 0.00m (antenna - WGS84) PDOP:
 3.7

!Heading 251.1T COG 102.6G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.1T	665030.35m	5654721.88m	0.00m	6.69m	287.26T
! 1 SECOND DATUM	251.1T	665029.83m	5654721.39m	0.00m	6.39m	292.87T
! 2 NAV1 Antenna	251.1T	664997.92m	5654711.82m	0.00m	28.79m	63.76T
! 3 NAV2 Antenna	251.1T	664993.06m	5654708.27m	0.00m	34.71m	61.84T
! 4 CONQUEROR	303.8T	207096.48m	6081953.58m	-18.12m	626361.04m	134.92T
! 5 SENTINEL	209.8T	662877.59m	5652168.84m	-18.29m	3337.28m	38.84T

Fix/FFID: 201/ 201 Time 07:05:04.0 UTC 05/05/2001
 Nav. 1 MRDGPS1 39d14'27.5832"S 142d54'44.1668"E 18.19m (datum - local)
 665030.29m 5654721.78m
 (In Use) 39d14'22.6281"S 142d54'47.8046"E 0.00m (antenna - WGS84) PDOP:
 2.3

Nav. 2 DIR-INJ 39d14'27.6096"S 142d54'44.1450"E 18.19m (datum - local)
 65029.75m 5654720.97m
 39d14'22.7567"S 142d54'47.6043"E 0.00m (antenna - WGS84) PDOP:
 3.7

!Heading 251.2T COG 76.0G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.1T	665030.34m	5654721.91m	0.00m	6.68m	287.02T
! 1 SECOND DATUM	251.2T	665029.84m	5654721.31m	0.00m	6.43m	293.55T
! 2 NAV1 Antenna	251.2T	664997.91m	5654711.87m	0.00m	28.78m	63.86T
! 3 NAV2 Antenna	251.2T	664993.07m	5654708.19m	0.00m	34.74m	61.72T
! 4 CONQUEROR	303.8T	207043.05m	6082003.34m	-18.12m	626434.00m	134.92T
! 5 SENTINEL	209.5T	662868.19m	5652156.20m	-18.29m	3353.01m	38.82T

Fix/FFID: 202/ 202 Time 07:05:14.0 UTC 05/05/2001
 Nav. 1 MRDGPS1 39d14'27.5848"S 142d54'44.1683"E 18.19m (datum - local)
 665030.33m 5654721.73m
 (In Use) 39d14'22.6297"S 142d54'47.8061"E 0.00m (antenna - WGS84) PDOP:
 2.3

Nav. 2 DIR-INJ 39d14'27.6195"S 142d54'44.1439"E 18.19m (datum - local)
 665029.72m 5654720.67m
 39d14'22.7666"S 142d54'47.6032"E 0.00m (antenna - WGS84) PDOP:
 3.8

!Heading 251.2T COG 162.9G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.1T	665030.33m	5654721.88m	0.00m	6.68m	287.34T
! 1 SECOND DATUM	251.2T	665029.79m	5654721.08m	0.00m	6.49m	295.58T
! 2 NAV1 Antenna	251.2T	664997.89m	5654711.88m	0.00m	28.79m	63.88T
! 3 NAV2 Antenna	251.2T	664993.00m	5654708.02m	0.00m	34.88m	61.52T
! 4 CONQUEROR	303.8T	206989.61m	6082053.10m	-18.12m	626506.97m	134.92T
! 5 SENTINEL	207.1T	662856.47m	5652143.71m	-18.29m	3370.11m	38.84T

Fix/FFID: 203/ 203 Time 07:05:24.0 UTC 05/05/2001
 Nav. 1 MRDGPS1 39d14'27.5844"S 142d54'44.1722"E 18.19m (datum - local)
 665030.42m 5654721.74m
 (In Use) 39d14'22.6292"S 142d54'47.8100"E 0.00m (antenna - WGS84) PDOP:
 2.3

Nav. 2 DIR-INJ 39d14'27.6158"S 142d54'44.1493"E 18.19m (datum - local)
 665029.85m 5654720.78m
 39d14'22.7629"S 142d54'47.6086"E 0.00m (antenna - WGS84) PDOP:
 3.8

FINAL POSITIONING REPORT – 5TH MAY 2001 – THYLACINE-1

!Heading 251.2T COG 144.3G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.1T	665030.40m	5654721.79m	0.00m	6.77m	287.81T
! 1 SECOND DATUM	251.2T	665029.77m	5654720.63m	0.00m	6.69m	299.06T
! 2 NAV1 Antenna	251.2T	664997.95m	5654711.80m	0.00m	28.76m	63.70T
! 3 NAV2 Antenna	251.2T	664992.98m	5654707.58m	0.00m	35.10m	60.90T
! 4 CONQUEROR	303.8T	206936.25m	6082102.80m	-18.12m	626579.84m	134.92T
! 5 SENTINEL	211.6T	662846.62m	5652130.62m	-18.29m	3386.47m	38.82T

Fix/FFID: 204/ 204 Time 07:05:34.0 UTC 05/05/2001
 Nav. 1 MRDGPST 39d14'27.5857"S 142d54'44.1710"E 18.19m (datum - local)
 665030.39m 5654721.70m
 (In Use) 39d14'22.6306"S 142d54'47.8088"E 0.00m (antenna - WGS84) PDOP:
 2.3

Nav. 2 DIR-INJ 39d14'27.6196"S 142d54'44.1539"E 18.19m (datum - local)
 665029.96m 5654720.66m
 39d14'22.7667"S 142d54'47.6132"E 0.00m (antenna - WGS84) PDOP:
 3.8

!Heading 251.2T COG 170.1G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.1T	665030.40m	5654721.68m	0.00m	6.81m	288.73T
! 1 SECOND DATUM	251.2T	665029.74m	5654720.19m	0.00m	6.88m	302.37T
! 2 NAV1 Antenna	251.2T	664997.95m	5654711.69m	0.00m	28.82m	63.49T
! 3 NAV2 Antenna	251.2T	664992.94m	5654707.14m	0.00m	35.34m	60.30T
! 4 CONQUEROR	303.8T	206882.81m	6082152.56m	-18.12m	626652.82m	134.92T
! 5 SENTINEL	210.5T	662834.69m	5652119.22m	-18.29m	3402.87m	38.85T

Fix/FFID: 205/ 205 Time 07:05:44.0 UTC 05/05/2001
 Nav. 1 MRDGPST 39d14'27.5851"S 142d54'44.1594"E 18.19m (datum - local)
 665030.11m 5654721.72m
 (In Use) 39d14'22.6299"S 142d54'47.7972"E 0.00m (antenna - WGS84) PDOP:
 2.3

Nav. 2 DIR-INJ 39d14'27.6212"S 142d54'44.1354"E 18.19m (datum - local)
 665029.51m 5654720.62m
 39d14'22.7683"S 142d54'47.5946"E 0.00m (antenna - WGS84) PDOP:
 3.8

!Heading 251.2T COG 252.5G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.1T	665030.12m	5654721.67m	0.00m	6.55m	289.61T
! 1 SECOND DATUM	251.2T	665029.64m	5654720.39m	0.00m	6.69m	301.46T
! 2 NAV1 Antenna	251.2T	664997.67m	5654711.68m	0.00m	29.07m	63.71T
! 3 NAV2 Antenna	251.2T	664992.84m	5654707.33m	0.00m	35.34m	60.64T
! 4 CONQUEROR	303.8T	206829.39m	6082202.31m	-18.12m	626725.77m	134.92T
! 5 SENTINEL	215.4T	662824.51m	5652107.01m	-18.29m	3418.78m	38.85T

Fix/FFID: 922/ 922 Time 09:05:14.0 UTC 05/05/2001
 Nav. 1 MRDGPST 39d14'27.5753"S 142d54'44.1730"E 18.19m (datum - local)
 665030.44m 5654722.02m
 (In Use) 39d14'22.6183"S 142d54'47.8100"E 0.00m (antenna - WGS84) PDOP:
 2.5

Nav. 2 DIR-INJ 39d14'27.6287"S 142d54'44.1116"E 18.19m (datum - local)
 665028.94m 5654720.40m
 39d14'22.7738"S 142d54'47.5698"E 0.00m (antenna - WGS84) PDOP:
 2.5

!Heading 251.3T COG 344.2G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.3T	665030.58m	5654721.97m	0.00m	6.88m	285.91T
! 1 SECOND DATUM	251.3T	665029.10m	5654720.41m	0.00m	6.24m	303.94T
! 2 NAV1 Antenna	251.3T	664998.12m	5654712.03m	0.00m	28.52m	63.97T
! 3 NAV2 Antenna	251.3T	664992.29m	5654707.41m	0.00m	35.79m	61.17T
! 4 CONQUEROR	127.4T	665000.74m	5655162.81m	-18.18m	439.46m	175.76T
! 5 SENTINEL	328.5T	662624.01m	5662625.05m	-18.05m	8258.09m	161.91T

Fix/FFID: 923/ 923 Time 09:05:24.0 UTC 05/05/2001

FINAL POSITIONING REPORT – 5TH MAY 2001 – THYLACINE-1

Nav. 1 MRDGPS1 39d14'27.5822"S 142d54'44.1785"E 18.19m (datum - local)
 665030.57m 5654721.80m
 (In Use) 39d14'22.6234"S 142d54'47.8147"E 0.00m (antenna - WGS84) PDOP:
 2.5

Nav. 2 DIR-INJ 39d14'27.6322"S 142d54'44.1200"E 18.19m (datum - local)
 665029.14m 5654720.29m
 39d14'22.7751"S 142d54'47.5772"E 0.00m (antenna - WGS84) PDOP:
 2.5

!Heading 251.4T COG 201.3G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.4T	665030.57m	5654721.92m	0.00m	6.89m	286.39T
! 1 SECOND DATUM	251.4T	665029.10m	5654720.34m	0.00m	6.27m	304.45T
! 2 NAV1 Antenna	251.4T	664998.10m	5654712.00m	0.00m	28.55m	63.93T
! 3 NAV2 Antenna	251.4T	664992.27m	5654707.37m	0.00m	35.82m	61.13T
! 4 CONQUEROR	127.9T	665022.02m	5655146.02m	-18.18m	422.05m	178.52T
! 5 SENTINEL	327.9T	662573.98m	5662668.74m	-18.05m	8314.51m	161.67T

 Fix/FFID: 924/ 924 Time 09:05:34.0 UTC 05/05/2001
 Nav. 1 MRDGPS1 39d14'27.5792"S 142d54'44.1880"E 18.19m (datum - local)
 665030.80m 5654721.89m
 (In Use) 39d14'22.6204"S 142d54'47.8243"E 0.00m (antenna - WGS84) PDOP:
 2.5

Nav. 2 DIR-INJ 39d14'27.6346"S 142d54'44.1276"E 18.19m (datum - local)
 665029.32m 5654720.21m
 39d14'22.7775"S 142d54'47.5848"E 0.00m (antenna - WGS84) PDOP:
 2.5

!Heading 251.4T COG 118.5G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.4T	665030.68m	5654721.87m	0.00m	7.01m	286.49T
! 1 SECOND DATUM	251.4T	665029.17m	5654720.26m	0.00m	6.38m	304.63T
! 2 NAV1 Antenna	251.4T	664998.20m	5654711.98m	0.00m	28.47m	63.81T
! 3 NAV2 Antenna	251.4T	664992.34m	5654707.33m	0.00m	35.79m	61.02T
! 4 CONQUEROR	126.1T	665042.83m	5655129.19m	-18.18m	405.65m	181.45T
! 5 SENTINEL	328.4T	662521.03m	5662714.70m	-18.05m	8374.12m	161.42T

 Fix/FFID: 925/ 925 Time 09:05:44.0 UTC 05/05/2001
 Nav. 1 MRDGPS1 39d14'27.5860"S 142d54'44.1851"E 18.19m (datum - local)
 665030.73m 5654721.68m
 (In Use) 39d14'22.6272"S 142d54'47.8214"E 0.00m (antenna - WGS84) PDOP:
 2.5

Nav. 2 DIR-INJ 39d14'27.6381"S 142d54'44.1234"E 18.19m (datum - local)
 665029.21m 5654720.11m
 39d14'22.7810"S 142d54'47.5807"E 0.00m (antenna - WGS84) PDOP:
 2.5

!Heading 251.4T COG 148.2G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.4T	665030.74m	5654721.70m	0.00m	7.12m	287.61T
! 1 SECOND DATUM	251.4T	665029.26m	5654720.12m	0.00m	6.54m	305.22T
! 2 NAV1 Antenna	251.4T	664998.26m	5654711.82m	0.00m	28.48m	63.48T
! 3 NAV2 Antenna	251.4T	664992.42m	5654707.20m	0.00m	35.77m	60.77T
! 4 CONQUEROR	128.1T	665063.74m	5655111.64m	-18.18m	389.70m	184.64T
! 5 SENTINEL	327.5T	662471.32m	5662757.36m	-18.05m	8429.77m	161.18T

 Fix/FFID: 926/ 926 Time 09:05:54.0 UTC 05/05/2001
 Nav. 1 MRDGPS1 39d14'27.5807"S 142d54'44.1795"E 18.19m (datum - local)
 665030.60m 5654721.85m
 (In Use) 39d14'22.6220"S 142d54'47.8158"E 0.00m (antenna - WGS84) PDOP:
 2.5

Nav. 2 DIR-INJ 39d14'27.6369"S 142d54'44.1208"E 18.19m (datum - local)
 665029.15m 5654720.15m
 39d14'22.7798"S 142d54'47.5780"E 0.00m (antenna - WGS84) PDOP:
 2.5

!Heading 251.4T COG 172.0G SOG 0.0 kt

FINAL POSITIONING REPORT – 5TH MAY 2001 – THYLACINE-1

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.4T	665030.72m	5654721.64m	0.00m	7.13m	288.16T
! 1 SECOND DATUM	251.4T	665029.31m	5654720.02m	0.00m	6.63m	305.66T
! 2 NAV1 Antenna	251.4T	664998.24m	5654711.76m	0.00m	28.52m	63.37T
! 3 NAV2 Antenna	251.4T	664992.47m	5654707.10m	0.00m	35.78m	60.60T
! 4 CONQUEROR	129.7T	665084.28m	5655094.37m	-18.18m	375.27m	188.03T
! 5 SENTINEL	328.3T	662419.23m	5662801.93m	-18.05m	8488.10m	160.94T

Last Fix/FFID: 927/ 927 Time 09:06:04.0 UTC 05/05/2001
 Nav. 1 MRDGP1 39d14'27.5923"S 142d54'44.1844"E 18.19m (datum - local)
 665030.71m 5654721.49m
 (In Use) 39d14'22.6335"S 142d54'47.8206"E 0.00m (antenna - WGS84) PDOP:
 2.5

Nav. 2 DIR-INJ 39d14'27.6408"S 142d54'44.1272"E 18.19m (datum - local)
 665029.30m 5654720.02m
 39d14'22.7838"S 142d54'47.5845"E 0.00m (antenna - WGS84) PDOP:
 2.5

!Heading 251.4T COG 187.2G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
! 0 CRP	251.4T	665030.67m	5654721.54m	0.00m	7.11m	288.99T
! 1 SECOND DATUM	251.4T	665029.29m	5654720.06m	0.00m	6.59m	305.49T
! 2 NAV1 Antenna	251.4T	664998.19m	5654711.66m	0.00m	28.61m	63.24T
! 3 NAV2 Antenna	251.4T	664992.45m	5654707.13m	0.00m	35.78m	60.66T
! 4 CONQUEROR	125.9T	665105.14m	5655076.83m	-18.18m	362.06m	191.74T
! 5 SENTINEL	328.2T	662368.53m	5662845.18m	-18.05m	8544.90m	160.71T

Total Fixes 728
 Steer Point O/T CRP

Easting	Mean	665030.33
	SD	0.25
Northing	Mean	5654721.49
	SD	0.35
Range to target		6.81
Bearing to target		291.67
Gyro (T)	Mean	251.49
	SD	0.19

NOTE: Distances are in m.
 Angles are in degrees.

05/05/2001 21:18:38 UTC
 *** FUGRO SURVEY STARFIX.SEIS ***

Waypoint : THYLACINE-1-ACT
 Position : **39d14'27.5922"S 142d54'44.1674"E** 0.0m
665030.3mE 5654721.5mN 0.0m